

***INTERNATIONAL CYANIDE
MANAGEMENT INSTITUTE***

***Cyanide Code Compliance Audit
Gold Mining Operations***

Summary Audit Report

***Gold Fields
South Deep Gold Mine
South Africa***

30th June – 4th July 2008

Name of operation: South Deep Gold Mine

Name of Operation Owner: Gold Fields Limited

Name of Operation Operator: South Deep is managed by Gold Fields

Name of Responsible Manager: Mr. Stephen Joseph, Metallurgical Manager

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Location detail and description of operation:

South Deep Gold Mine was acquired by Goldfields Limited on 1st December 2006 and is currently an operational division within the Goldfields Group. The mine is situated in the Magisterial District of Westonaria, some 45km south-west of Johannesburg in the Republic of South Africa. The property covers an area of approximately 2,469 hectares of surface (freehold) land and approximately 3,566 hectares of continuous mineral rights. The operation has processed approximately 110 million tons of ore and recovered 23 million oz of gold to date. At South Deep, the main target horizon is predominantly in the Middle Elsburg horizon, but in order to extract this ground at depths which range from 2 500 to over 3 500 meters below surface, the virgin rock stress levels must be brought to acceptable levels, these being similar to those found on other shallower mines where extraction takes place at around 1 000 meters below surface. To achieve this result it is therefore necessary to destress the main target horizon by first stoping below it.

Historically, the progress that has previously been made on destress mining has not been good with very low face advances having been achieved, and hence the requirement to accelerate this mining through mechanised mining techniques in order to make available mining ground on the wide ore body horizon. The Middle Elsburg horizon is the main target horizon and the extraction

thereof is done with the aid of trackless machinery and equipment. The extraction being totally dependant on first having the destress in place. Various mining methods are adopted in the project areas and are applied in terms of the thickness of the reef target as well as in terms of the payability of the reef.

The ore is processed at South Deep Gold Plant which is designed to treat 220 000 tons per month of reef and surface material. The plant consists of an open plan stockpile feeding a SAG-BALL milling circuit with up to 35 % of the plant feed reporting to a Gravity Recoverable Gold (GRG) Knelson concentration Circuit.

Mill circuit cyclone overflow at 75% -75 microns is directed to linear screens to remove tramp material before being thickened in preparation for cyanide leaching. The plant use liquid sodium cyanide and its consumption ranges between 0.3 – 0.35 Kg/tonne of ore milled. Leached ore is then pumped to a Carousel CIP unit for adsorption of gold in solution on to activated carbon.

Loaded carbon is acid washed prior to elution in an AARL (Anglo American Research Laboratories) strip circuit. Pregnant eluate solution is electrowon in sludge reactors. The gold bearing sludge is filtered and dried before being smelted in an induction furnace to produce gold bars. Carbon is regenerated and screened prior to recycling to the CIP circuit. The plant recovers approximately 97.5 % of the gold presented. Barren slurry from the CIP circuit is transferred to a Backfill plant for cyclone classification of material prior to transfer to the tailings dam and/ or underground backfilling.

South Deep will be building a new TSF and the design has been completed with approval having been given for R457 million for phase one of the project. The construction will commence in April 2009. The mine will also be ramping up and maintaining high production levels from the trackless section of the mine.

The focus on South Deep Gold Mine is placed on both the development and the mechanised destress mining in order to have in place the correct infrastructure suitable to serve any anticipated tonnage build up in the future. Without this, and together with the Current Mine reserves being depleted, the mine will not be able to increase its tonnage and therefore gold profile going forward.

Auditor's Finding

This operation is

☒ X in full compliance

☒ X in substantial compliance *(see below)

☐ not in compliance

with the International Cyanide Management Code.

* The Corrective Action Plan to bring an operation in substantial compliance into full compliance must be enclosed with this Summary Audit Report. The plan must be fully implemented within one year of the date of this audit.

Audit Company: Eagle Environmental

Audit Team Leader: Arend Hoogervorst

E-mail: arend@eagleenv.co.za

Name and Signature of Other Auditor:

Name : Dawid M. L Viljoen

Signature



Date: 25/11/2008

Dates of Audit: 30th June – 4th July 2008

I attest that I meet the criteria for knowledge, experience and conflict of interest for Code Verification Audit Team Leader, established by the International Cyanide Management Institute and that all members of the audit team meet the applicable criteria established by the International Cyanide Management Institute for Code Verification Auditors.

I attest that this Summary Audit Report accurately describes the findings of the verification audit. I further attest that the verification audit was conducted in a professional manner in accordance with the International Cyanide Management Code Verification Protocol for Gold Mine Operations and using standard and accepted practices for health, safety and environmental audits.

Gold Fields South Deep Gold Mine

Facility

Signature of Lead Auditor

28/11/08
Date

BEVERLEY MYKILE NEL

Conveyancing Paralegal

Ewing McKeown Inc.

(Formerly Ewing Adams & Associates)

Commissioner of Oaths RSA

28 Old Main Road, Hillcrest 3610

REF: 9/1/8/2 Pinetown, 18/11/2004

Certified/notarized:-

South Deep Gold Mine

Signature of Lead Auditor

25th November 2008

Auditor's Findings

1. PRODUCTION: *Encourage responsible cyanide manufacturing by purchasing from manufacturers who operate in a safe and environmentally protective manner.*

Standard of Practice 1.1: Purchase cyanide from manufacturers employing appropriate practices and procedures to limit exposure of their workforce to cyanide, and to prevent releases of cyanide to the environment.

X in full compliance with

The operation is ☐ ☐ in substantial compliance with **Standard of Practice 1.1**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The plant's cyanide manufacturer and supplier, Sasol, is an ICMI Code Signatory and has achieved full compliance in a verification audit against the ICMI Cyanide Code. Sasol only supplies liquid cyanide, delivered by bulk tanker, to the mine.

The supply contract stipulates that the supplier must be signatory to the ICMI and must be ICMI Code compliant.

2. TRANSPORTATION: *Protect communities and the environment during cyanide transport.*

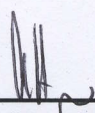
Standard of Practice 2.1: Establish clear lines of responsibility for safety, security, release prevention, training and emergency response in written agreements with producers, distributors and transporters.

X in full compliance with

The operation is ☐ ☐ in substantial compliance with **Standard of Practice 2.1**

☐ ☐ not in compliance with

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Basis for this Finding/Deficiencies Identified:

Liquid cyanide in bulk tankers is transported to the mine by Sasol Infrachem SILog, a subsidiary of Sasol. Sasol Infrachem SILog is a signatory to the ICMI Code and was certified as a transporter on March 8th 2007.

The contract stipulates in detail, the responsibilities and requirements for packaging and labeling, safety, security, unloading, emergency response (spills prevention and clean-up), route planning and risk assessments, community liaison, emergency response resource access and availability, training, and communication.

Standard of Practice 2.2: Require that cyanide transporters implement appropriate emergency response plans and capabilities and employ adequate measures for cyanide management.

X in full compliance with

**The operation is
2.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The contract requires that appropriate emergency response plans are put in place and that training to deal with identified cyanide emergencies is undertaken. Control measures are appropriate to deal with the transportation, handling, delivery, and off loading of liquid cyanide.

3. HANDLING AND STORAGE: Protect workers and the environment during cyanide handling and storage.

Standard of Practice 3.1: Design and construct unloading, storage and mixing facilities consistent with sound, accepted engineering practices, quality control/quality assurance procedures, spill prevention and spill containment measures.

X in full compliance with

**The operation is
3.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Detailed, professionally designed, drawings for the cyanide storage area were sighted which indicated the structures were designed to accepted engineering standards to store liquid cyanide and located on concrete and away from people and surface waters. Satisfactory technical inspection reports on the facility from the cyanide supplier, Sasol, were sighted. The offloading facility is located outside of the plant and liquid cyanide is piped into the storage facility located within the plant. Secondary containments built from concrete provide a competent barrier to leakages and provide adequate and appropriate containment. The liquid cyanide storage area is located in a well ventilated area to prevent hydrogen cyanide gas building up. Cyanide storage tanks are equipped with level indicators, interlocked with the offloading air valve and linked to the control room. Procedures covering cyanide unloading, transfer and handling were reviewed and found to be effective. Cyanide areas are fenced and security controlled with adequate controls and separation to prevent mixing with incompatible materials.

Standard of Practice 3.2: Operate unloading, storage and mixing facilities using inspections, preventive maintenance and contingency plans to prevent or contain releases and control and respond to worker exposures.

X in full compliance with

**The operation is
3.2**

☐ ☐ in substantial compliance with **Standard of Practice**


☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Procedures are in place to cover all liquid spill responses. All procedures include step by step task and hazard identification and appropriate actions for normal, abnormal and emergency occurrences during offloading and transfer. PPE requirements are included in procedures. Use is made of the Buddy system to optimise safety and safe handling. Inspection checklists were sighted and interviews conducted which confirmed cyanide awareness and competency.

4. OPERATIONS: Manage cyanide process solutions and waste streams to protect human health and the environment.

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Standard of Practice 4.1: Implement management and operating systems designed to protect human health and the environment utilizing contingency planning and inspection and preventive maintenance procedures.

X in full compliance with

**The operation is
4.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has 112 procedures for normal, abnormal and emergency conditions covering management of cyanide facilities. These include engineering procedures, safe work procedures, PMS (Preventative Maintenance System) procedures and maintenance inspection guidelines. covering other related processes and plant activities which were extensively sampled, reviewed and found to be effective. The TSF Mandatory Code of Practice (operating manual) was developed from the original design documentation and parameters for the facility and associated water management procedures and appropriate supporting technical information were sighted and reviewed. Quarterly technical reviews and inspections of the TSF facilities are undertaken to ensure integrity and safety. A change management procedure is in place and examples of the procedure's operation were sighted.

Preventative maintenance and associated inspections are controlled on a spreadsheet-based system utilising an associated job card system. Key pumps, tanks, bunded areas and equipment were checked on the system and found to be systematically maintained through visual and mechanical checks, inspections, thickness tests and historical reviews. No emergency power is required to prevent releases due to plant design features. Routine daily and monthly inspection reports, legal inspections, and checklists for both the plant and the TSF were sampled and employees interviewed to check the effectiveness of systems and ensure proactive and reactive management.

Standard of Practice 4.2: Introduce management and operating systems to minimize cyanide use, thereby limiting concentrations of cyanide in mill tailings.

X in full compliance with

**The operation is
4.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

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☐ ☐ not subject to

Basis for this Finding/Deficiencies Identified:

Currently, underground ore is consistent but surface material processed is variable. Cyanide profiles were monitored over the leach train and pre oxidation was tested and found to reduce cyanide consumption. Cyanide optimisation is done based on leach test work on tails and bottle roll tests are conducted to determine optimal conditions. A two stage cyanide addition strategy is being evaluated to further reduce cyanide consumption. A TAC 2000 cyanide addition control and analyser is used for cyanide control and a WAD 1000 cyanide analyser monitors WAD cyanide in the tailings pumped to the backfill and TSF.

Standard of Practice 4.3: Implement a comprehensive water management program to protect against unintentional releases.

X in full compliance with

**The operation is
4.3**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The mine is in the process of implementing a dynamic, probabilistic GoldSim water balance model. A water balance is in place for the TSF and is being revised as a part of the wider use of the GoldSim Water Balance model. Information is available on rainfall, storm events, and solution deposition, using locally available data. Procedures and operating plans for the TSF were developed, based upon the direction given in the design data and studies. Daily plant inspections record all water pond levels as well as rainfall data and phreatic levels at the TSF. Procedures and plans are in place to manage normal and emergency conditions. The minimum freeboards and operating capacities of ponds are identified and documented. All relevant procedures, plans and initiatives were reviewed and found to be appropriate in managing to prevent overtopping and unintentional releases.

Standard of Practice 4.4: Implement measures to protect birds, other wildlife and livestock from adverse effects of cyanide process solutions.

X in full compliance with

The operation is

**X in substantial compliance with Standard of Practice
4.4**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

WAD cyanide values for discharges to the TSF and open process solution ponds have been shown to be less than 50 ppm WAD Cyanide. However, there is deemed by the auditors to be insufficient data to demonstrate sustainable levels below 50ppm WAD cyanide over time. A corrective action plan has been agreed to produce at least six months of data showing below 50 ppm WAD cyanide levels. No cyanide-related bird, or wildlife mortalities have been experienced since the signing of the ICMI Code. A procedure and inspection requirements are in place to monitor live wildlife, and mortalities, should they occur.

Standard of Practice 4.5: Implement measures to protect fish and wildlife from direct and indirect discharges of cyanide process solutions to surface water.

X in full compliance with

**The operation is
4.5**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has no direct discharges to surface water but there is the potential for an indirect discharge to surface water from the return water dam. The mine complies with the South African Department of Water Affairs Guidelines which states that water quality should not exceed 0.5ppm free cyanide.

Work instructions, procedures and monitoring is in place to manage and prevent this occurrence. There are procedures in place to manage spills and releases to prevent discharge to surface water and ongoing surface and groundwater monitoring is undertaken to monitor seepage.

Standard of Practice 4.6: Implement measures designed to manage seepage from cyanide facilities to protect the beneficial uses of ground water.


X in full compliance with

**The operation is
4.6**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

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Basis for this Finding/Deficiencies Identified

The applicable jurisdiction does not identify any beneficial uses or down gradient compliance points. Also no jurisdictional numerical standards are contained in any acts. A full study of water users was conducted and the water use identified by the mine is predominantly drinking water and livestock. Water quality guidelines <0.2 mg/l (no risk) <0.3 mg/l CN (insignificant risk), <0.6mg/l (low risk) Table 1 Proposed water quality criteria of the South African Department of National Health and Population Development in South African Water Quality Guidelines Vol. 1 domestic use, 1st Edition, 1993. Monitoring boreholes are provided and monitored to establish early warning in the event of any seepage occurring. Current and historical data indicates cyanide levels are at, or below, the limits of detection. Potential seepage into paddocks and containment areas around TSF are monitored by inspections and managed via TSF operating manual.

Practice 4.7: Provide spill prevention or containment measures for process tanks and pipelines.

X in full compliance with

**The operation is
4.7**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

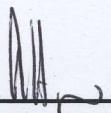
Basis for this Finding/Deficiencies Identified:

The site's design includes bunding and containment for cyanide tankage and piping. Cyanide tanks and pipelines are manufactured from materials compatible with cyanide and high pH conditions. Spill prevention is primarily managed through the use of procedures, preventative maintenance and training. Solutions and liquids in secondary containment are pumped back into the circuit. Effective procedures were also sighted which manage cyanide spillages, leaks, decontamination and transferring spillage from cyanide sumps. Bunded areas are interlinked, where required, to maintain the required '110% capacity of largest tank' standard. Procedures were sighted covering inspections, solution water management, and stormwater management. TSF pipelines are also regularly inspected twice daily for leaks.

Standard of Practice 4.8: Implement quality control/quality assurance procedures to confirm that cyanide facilities are constructed according to accepted engineering standards and specifications.

X in full compliance with

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The operation is ☐ ☐ in substantial compliance with **Standard of Practice 4.8**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Quality control and quality assurance records were sighted for the QA/QC program and tests and checks sighted included hand-over and civil inspection certificates, and installation certificates for civil, electrical, mechanical and instrumentation work.

Inspections by a professional engineer were sighted and action plans for improvements, modifications and repairs were sighted. Fit for purpose confirmations on drawings and reports were also sighted.

The weekly reports for the TSF were sighted and reflected appropriate on-going engineering controls and checks on construction, stability and safety.

Standard of Practice 4.9: Implement monitoring programs to evaluate the effects of cyanide use on wildlife, surface and ground water quality.

X in full compliance with

The operation is ☐ ☐ in substantial compliance with **Standard of Practice 4.9**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

A procedure is in place which covers both surface and groundwater monitoring, in addition to bio-monitoring. Monitoring, sample preservation, and custody and chain of custody procedures were developed by appropriately qualified contractors and checking by external certified laboratories. Monitoring and inspections (including checks for bird mortalities and bird species on the TSFs) are guided by appropriate procedures and guidelines. The site's water quality sampling regime was sighted which indicated sample sites, samples types to be taken, and frequency. Monitoring frequencies range from daily, to weekly to monthly to quarterly. Detail on sample points was reviewed and found adequate for sample point circumstances. The site's Environmental Department investigates any wildlife mortalities, which are formally reported as environmental incidents in the site EMS (Environmental Management System).

5. DECOMMISSIONING: Protect communities and the environment from cyanide through development and implementation of decommissioning plans for cyanide facilities



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Standard of Practice 5.1: Plan and implement procedures for effective decommissioning of cyanide facilities to protect human health, wildlife and livestock.

X in full compliance with

**The operation is
5.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Specific procedures are in place to ensure that planning and costing adequately covers cyanide decommissioning and closure. An implementation schedule forms an appendix in the decommissioning and reclamation plan. The mine closure plan is reviewed annually.

Standard of Practice 5.2: Establish an assurance mechanism capable of fully funding cyanide related decommissioning activities.

X in full compliance with

**The operation is
5.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The site Decommissioning Plan was confirmed as including third party cyanide decommissioning costs. Documentation supporting the closure and decommissioning financial assurance mechanism, a trust fund, was sighted and noted to have more than sufficient funding to fully implement cyanide decommissioning. The trust fund is a condition of the mining licence.

6. WORKER SAFETY: Protect workers' health and safety from exposure to cyanide.

Standard of Practice 6.1: Identify potential cyanide exposure scenarios and take measures as necessary to eliminate, reduce or control them.

X in full compliance with

**The operation is
6.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Detailed cyanide management procedures are in place and functional, which cover the minimising of worker exposure to cyanide during all cyanide-related tasks. A number of these procedures and their associated certificates and documents were sampled and found to be effective. The site has a baseline risk assessment and conducts issue-based risk assessments when required. Site procedures were extensively checked through examination and interview and records relating to risk assessments checked for worker input and involvement. The site has a change management system in place and the TSF contractor also has their own change management procedure. Appropriate PPE and pre-work inspections are specified in procedures for all cyanide-related tasks. Procedures were developed from risk assessments and reflect responses to normal and abnormal conditions. Worker involvement and consultation is through risk assessments, consultations in Safety Representative Committee meetings, Plant Committee meetings and feedback sessions.

Standard of Practice 6.2: Operate and monitor cyanide facilities to protect worker health and safety and periodically evaluate the effectiveness of health and safety measures.

X in full compliance with

**The operation is
6.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Plant pH set point is 11, which comes from the original plant design and optimisation study report for the plant. Hot spot surveys have identified potential hotspots in the smelt house, CIP feed launder, leach feed, backfill and elution bund where fixed monitors have been located. On-going inspections and checks are also used to monitor and check facilities and emergency response equipment functioning. Safety equipment such as safety showers, low pressure eye wash stations, and dry powder fire extinguishers are numerous and adequately signposted. A site wide pipe colour coding system is in operation which includes cyanide pipe colour coding and directional flow signage. Fixed and mobile HCN gas monitors are used on site and are calibrated and maintained according to procedures using manufacturer's recommendations. Formal employee interviews were used to check awareness and sensitivity to health and safety measures and the response from employees and contractors alike, was found to be appropriate and acceptable. Accident and incident reporting and investigation procedures were found to be in place and effective.

Standard of Practice 6.3: Develop and implement emergency response plans and procedures to respond to worker exposure to cyanide.

X in full compliance with

**The operation is
6.3**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Emergency cyanide equipment is located in the plant emergency room, offloading control office, backfill emergency room and at the reagent strength storage area. Cyanide emergency procedures form part of the site-wide emergency preparedness plan which covers the whole site and includes the cyanide facilities. The scope of the plan includes site-based responses, the use of an emergency response team and supporting paramedics, and includes provision for evacuation of patients by ambulance to the local Gold Fields Leslie Williams mine hospital which is adequately staffed by appropriately trained personnel. Emergency first aid equipment, antidotes (stored in fridges according to manufacturer's specifications), medical oxygen and BA sets are accessible and this is supported by a formal cyanide first aid procedure. Equipment is regularly checked and tested and mock drills are held on site and in conjunction with the hospital. Interviews confirmed employee knowledge of cyanide hazards, and emergency response.

7. EMERGENCY RESPONSE *Protect communities and the environment through the development of emergency response strategies and capabilities.*

Standard of Practice 7.1: Prepare detailed emergency response plans for potential cyanide releases.

X in full compliance with

**The operation is
7.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The site has used a risk assessment to develop site-specific emergency scenarios and responses for its emergency response plan. The emergency preparedness plan combines existing procedural responses and emergency provisions to deal with the various

scenarios and includes and identifies the emergency response team and coordinators who are on all shifts. These preparations are regularly reviewed in the light of changes, mock drill learning points and employee feedback.

Standard of Practice 7.2: Involve site personnel and stakeholders in the planning process.

X in full compliance with

**The operation is
7.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Health and Safety Committee and Shift meetings are used to communicate developments and changes in all cyanide activities, including emergency response. Representatives of the workforce (employees, Health & Safety Representatives and Union representatives) were involved in the risk assessment to develop the emergency scenarios and response in the emergency response plan and procedures. The mine has established its own Emergency Response infrastructure and, although not directly involving the local response agencies, due to their limited capacity and skills, the agencies are kept well informed. Full cycle drills are used to involve hospital staff in planning processes. The AA 1000 standard (The AccountAbility Stakeholder Engagement & Sustainability Assurance System) has been used to identify the mine's zone of influence and communication on cyanide has been undertaken using leaflets, posters and meetings. Informal liaison has been maintained with adjoining mine emergency services to agree on mutual assistance, if required.

Standard of Practice 7.3: Designate appropriate personnel and commit necessary equipment and resources for emergency response.

X in full compliance with

**The operation is
7.3**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The Emergency Preparedness Plan details clear duties, roles and responsibilities for the various emergency scenarios and for a response coordinator and the various shift emergency response teams. The response coordinator is normally the Metallurgical

Manager (who has authority to commit necessary resources) and his alternate is the Senior Metallurgist. Emergency equipment lists were checked and site inspections confirmed availability and readiness. The Plan includes contact references (telephone, cell phone, etc.) of internal and external resources for the various scenarios, particularly with detail where external resources and skills might be needed. Emergency Team members were checked and training records and assessments showed the individuals to be well prepared and well equipped for cyanide emergencies. Periodic full scale drills involving internal and external stakeholders ensure that roles and responsibilities are understood and clearly implemented.

Standard of Practice 7.4: Develop procedures for internal and external emergency notification and reporting.

X in full compliance with

**The operation is
7.4**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The Emergency Preparedness Plan includes full details for appropriate emergency notification and reporting and the call-out procedure and contact information lists which are updated regularly. Media communication is done via a formal Gold Fields procedure. The Communication procedure and actions that may be appropriate for the community and contact details for community representatives were sighted.

Standard of Practice 7.5: Incorporate into response plans and remediation measures monitoring elements that account for the additional hazards of using cyanide treatment chemicals.


X in full compliance with

**The operation is
7.5**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:



The Emergency Preparedness Plan cross-references to detailed and specialised procedures which cover clean-up and remediation relating to releases, pipeline failures and spills, as appropriate to the site-specific identified scenarios. Use of neutralization processes and materials is clearly covered, as is disposal of contaminated materials and the use of treatment chemicals such as ferrous sulphate in surface water is prohibited. Sampling procedures also cover remediation issues. There are also cross references to the centralized environmental procedures which form part of the Environmental Management System. In the event of a spill, a water quality analyses program will be set up, based upon the existing framework and modified according to site and event specific requirements.

Standard of Practice 7.6: Periodically evaluate response procedures and capabilities and revise them as needed.

X in full compliance with

**The operation is
7.6**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The new Emergency Preparedness Plan, implemented in 2008, separates from the original non-cyanide specific mine emergency response plan. The Plan is required to be reviewed annually following incidents and emergency drills or when new information regarding cyanide becomes available. A full cycle drill to hospital was sighted. Evidence was sighted of learning points emerging from the various cyanide man down drills.

8. TRAINING: Train workers and emergency response personnel to manage cyanide in a safe and environmentally protective manner.

Standard of Practice 8.1: Train workers to understand the hazards associated with cyanide use.

X in full compliance with

**The operation is
8.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

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A Cyanide awareness is used for all site personnel working on the gold plant and an Induction video given to all employees, contractors and plant visitors before being allowed to pass through security onto the plant. A training matrix is in place which cover cyanide training for all positions. Site cyanide training programs were reviewed. Fourteen randomly selected employees were checked in interviews on their understanding of cyanide hazards, first aid and emergency response and this was verified through checking of their training records. Refresher training is conducted when employees return from annual leave.

Standard of Practice 8.2: Train appropriate personnel to operate the facility according to systems and procedures that protect human health, the community and the environment.

X in full compliance with

**The operation is
8.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The site's Training Matrix details training requirements for all cyanide workers in the plant. New employees are trained and passed out before being allowed to work in the Plant. Standard Operating Procedures are used as the training source material. Cyanide training is undertaken by a qualified Training Officer. The Trainer assesses employees after training and also carries out on-the-job observations and Planned Task Observations (PTOs) to test training effectiveness and application. Full records are kept of training and induction training records are kept for the life of the employee.

Standard of Practice 8.3: Train appropriate workers and personnel to respond to worker exposures and environmental releases of cyanide.

X in full compliance with

The operation is

☐ ☐ in substantial compliance with **Standard of Practice 8.3**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

All employees receive cyanide training which includes man-down response, and protecting themselves. A trained emergency response team on each shift will deal with incidents and workers are trained to barricade and raise the alarm and use of appropriate

PPE. Advanced training is given to the emergency response teams. Periodic mock drills are undertaken and training personnel attend these drills and formally evaluate response and performance. Training records were checked to confirm attendance and successful completion. General cyanide worker refresher training scheduled annually. Specialised Emergency Team refresher training (including relevant external responders) is done annually or as per schedule.

9. DIALOGUE: Engage in public consultation and disclosure.

Standard of Practice 9.1: Provide stakeholders the opportunity to communicate issues of concern.

X in full compliance with

**The operation is
9.1**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

The Environmental Impact Assessment for the new TSF provided an opportunity for stakeholders to communicate with the mine. From there, additional stakeholders were identified using the AA 1000 standard. A further opportunity came from involvement with the Rietspruit Forum, a statutory Water Catchment Management Body set up to involve all water users. The mine participated in presentations given to the community by the cyanide manufacturer and transporter, Sasol, on cyanide management and safety.

Standard of Practice 9.2: Initiate dialogue describing cyanide management procedures and responsively address identified concerns.

X in full compliance with

**The operation is
9.2**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Periodic meetings are held (which include cyanide education campaigns) which include presentations to stakeholders and include discussions on projects, general cyanide awareness, cyanide incidents and emergencies. Direct response was obtained during the discussions, arising from stakeholder questions and issues regarding cyanide. The phone

number of the Environmental Manager is widely available to communities in the case they need to contact her in case of any issue. Focus is placed upon verbal communication because of high illiteracy and a mine employee is dedicated to this communication. Any incidents or accidents occurring would be communicated using the above-mentioned forums.

Standard of Practice 9.3: Make appropriate operational and environmental information regarding cyanide available to stakeholders.

X in full compliance with

**The operation is
9.3**

☐ ☐ in substantial compliance with **Standard of Practice**

☐ ☐ not in compliance with

Basis for this Finding/Deficiencies Identified:

Incident information is provided to government officials according to legal reporting requirements. The Procedure for emergency response classifies incidents from levels 1 - 3. Level 1: Emergency involving no injuries and / or has not resulted and does not pose an imminent threat of significant environmental damage. Level 2: Emergency which involves minor injuries requires appropriate communication externally and poses an imminent threat of environmental damage. Level 3: Emergency involving major injuries or worse and which has resulted in significant environmental damage. Policy requires all level 3 to be reported to central and provincial government and to local government structures (which is relayed to local communities) from level 2. A Procedure for external environmental communication in place.

Environmental: All level 3 and above is reported to Department of Water Affairs and Forestry. Weekly all incidents are reported to Corporate Head Office with detailed descriptions of all level 2 and above. Quarterly reporting on incidents is made to the Rietspruit Forum (a public water user's forum). Environmental statistics are reported in the Corporate annual report with level 3 incidents and above including a description. Safety and Health: SAMRASS (South African Mine Reportable Accidents Statistics System) are reported to the Department of Minerals and Energy which include all lost time injuries and fatalities, serious incidents e.g. TSF failures, gassing incidents, loss of consciousness. All Safety, Health and Environmental statistics are included in annual report which is publicly available.